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TRADE AND DEVELOPMENT BOARD
Commission on Enterprise, Business Facilitation and Development
Expert Meeting on Electronic Commerce Strategies for Development:
The Basic Elements of an Enabling Environment for E-commerce
Geneva, 10–12 July 2002
Item 2 of the provisional agenda

PROVISIONAL AGENDA AND ANNOTATIONS

I. Provisional agenda

1. Election of officers

2. Adoption of the agenda

3. Electronic commerce strategies for development: The basic elements of an enabling environment for e-commerce

4. Adoption of the report of the meeting

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II. Annotations to the provisional agenda

Item 1: Election of officers

1. It is recommended that the Expert Meeting elect a Chairperson and a Vice-Chairperson-cum-Rapporteur.

Item 2: Adoption of the agenda

2. The provisional agenda for the Expert Meeting is reproduced in section I above. A detailed programme will be available one week before the meeting.

Documentation

TD/B/COM.3/EM.15/1 Provisional agenda and annotations

Item 3: Electronic commerce strategies for development: The basic elements of an enabling environment for e-commerce

3. At its sixth session, in February 2002, the Commission on Enterprise, Business Facilitation and Development decided to convene an Expert Meeting on Electronic Commerce Strategies for Development: The Basic Elements of an Enabling Environment for E-commerce.

4. This Expert Meeting will analyse national experiences of both developed and developing countries and identify key elements of participatory, comprehensive national e-commerce strategies and their impact/implications in developing countries. Policy areas likely to be considered during the meeting include (i) the linkages between e-commerce strategies and other aspects of development strategies; (ii) legal and regulatory aspects of e-commerce; (iii) infrastructure, access and telecommunications; (iv) awareness creation, education and training; and (v) approaches to the design and implementation of national e-commerce strategies.

5. The Expert Meeting will contribute towards a process of international consensus building concerning the integration of e-commerce into development strategies.

6. To facilitate the discussions, the UNCTAD secretariat has prepared an issues note on "Electronic commerce strategies for development: The basic elements of an enabling environment for e-commerce" (TD/B/COM.3/EM.15/2). In addition, experts are encouraged to prepare brief papers on the subject under discussion. These papers will be made available at the meeting in the form and language in which they are received.

Documentation

TD/B/COM.3/EM.15/2	"Electronic commerce strategies for development: The basic elements of an enabling environment for e-commerce". Issues note by the UNCTAD secretariat

Item 4: Adoption of the report of the meeting

7. The report of the Expert Meeting will be submitted to the Commission on Enterprise, Business Facilitation and Development at its seventh session in February 2003. The Expert Meeting may wish to authorize the Rapporteur, under the authority of the Chairperson, to prepare the final report after the conclusion of the meeting.

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TRADE AND DEVELOPMENT BOARD
Commission on Enterprise, Business Facilitation and Development
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Background Paper

Electronic Commerce Strategies for Development: The Basic Elements of an Enabling Environment for E-Commerce

Executive Summary

A fast-growing number of governments and international institutions are designing "e-strategies" for harnessing information and communications technologies (ICT) to promote economic and social development. In order for these efforts to succeed, developing countries must generate and exploit new economic opportunities through the adoption of e-business practices. This expert meeting is expected to contribute to the identification of the policy areas in which action at the national and international levels is needed. It will also examine the specific measures that are most likely to create an enabling environment for e-commerce in developing countries and will assess existing experiences in this regard. On the basis of the results of previous work carried out by UNCTAD in the field of e-commerce and development, and of a survey of selected countries that have adopted an e-strategy, this paper identifies the following key areas that developing countries need to consider in their e-strategies: awareness building, training and education; access and infrastructure; legal and regulatory reform; sector-specific policies to promote e-business; and e-government. Some frequently employed measures in each of these areas are summarized for discussion by the experts.

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I. INTRODUCTION

1. There is little doubt about the acceleration in social change that information and communications technologies (ICT) can produce, or the profound changes they can create in the structure of an economy. Whether such changes will increase or reduce the capacity of developing countries to close the multiple gaps that separate them from the industrialized world will largely (although not exclusively) depend on the environment in which the changes take place and the attitudes of the actors implementing them. The challenge is, therefore, to harness the Internet and other forms of ICT to ensure that their potential is indeed used to create economic opportunities, thus helping to fight poverty and providing a material basis for implementing solutions to other social ills. In practical terms, it is in their applications in the productive sphere that ICT are most likely to bring about improvements in the living standard of people in developing countries. This means that policies must be implemented to ensure that the new possibilities for creating, transforming, using and exchanging information and value are employed to improve the productivity of enterprises.

2. The question of how "e-strategies" should be designed and implemented, and their role in broader national development strategies, has received growing attention in the international forums where the issue of the global "digital divide" is being addressed. To name two forums involving all the major multilateral agencies together with key players from the NGO community and the private sector, this issue appeared on the agenda of both the G-8's DOT Force and the United Nations' ICT Task Force. Thus, the Genoa Plan of Action adopted by the G-8 last year includes as its action point 1 "to help establish and support developing country and emerging economy national e-strategies". Ensuring that the benefits of ICT are available to all is also one of the key goals that the international community has set itself in the Millennium Declaration.[1] As part of the actions undertaken by the United Nations to achieve these goals, its ICT Task Force has identified the provision of assistance to developing countries in designing national and regional ICT strategies as one of its medium-term goals and has set up a working group to this effect.

3. The convergence of these and other initiatives of the international community seems to indicate that there is agreement about the priority attention that ICT policies (and electronic commerce as part of them) should receive in poverty-reduction strategies. Success stories about how particular communities, enterprises or governments in developing countries have used e-commerce to create new economic opportunities abound. Yet, when it comes to priority-setting at the national level, action to facilitate participation by developing-country entrepreneurs in the benefits of e-commerce is often perceived as unduly competing for attention and resources with programmes to address basic development problems such as health or education.

4. E-commerce offers no instant cure for the ills of any economy; excessive expectations about what it can do for development should not be encouraged. However, when the cause of

[1] See A/RES/55/2 of 18 Sept. 2000 (www.un.org/millennium/declaration/ares552e.pdf).

such views is not lack of awareness (which is still often the case) but scepticism about the relevance of e-commerce or ICT in the context of the challenges facing developing countries, a fundamental point is being missed. The importance of ICT for development lies not so much in the size of the ICT sector itself as in the fact that the widespread use of these technologies enables people and organizations across the whole spectrum of social activities to work much more effectively. Calls for a greater emphasis on e-commerce or other applications of ICT in national development strategies are therefore calls not for detracting resources from other areas but for equipping countries with more powerful tools for achieving their medium- and long-range development objectives.

5. Within this context, it is likely that e-commerce (or, in a broader sense, e-business) will be among the most powerful transmission mechanisms through which ICT-induced change will spread across developing countries. The application of ICT to, for instance, health or education can certainly contribute to the achievement of basic development objectives and can, in the long term, lead to productivity increases. However, the acceleration of economic growth that ICT can bring about (especially through the adoption of e-business practices) will probably result in a more immediate and self-sustainable contribution to the reduction of poverty.

6. Given the comparatively low levels of productivity in developing countries, the adoption of ICT and e-commerce in these countries can yield particularly large relative improvements in productivity. In most cases (especially in activities that are not information-intensive), these gains are not derived directly from the technology itself but through incremental improvements resulting from organizational changes in the production process that are made possible (or indi. ensable) by the technology. An encouraging factor is that ICT seem to be spreading in the developing countries faster than was the case in previous technological revolutions. Leapfrogging opportunities and the opportunity to avoid the technological and business strategy mistakes of earlier entrants also work in favour of developing countries.

7. Developing countries can also profit from the opportunities provided by e-commerce for exploiting competitive advantages that were not usable in the "old economy". E-commerce gives small and medium-sized enterprises (SMEs) the ability to access international markets that used to be difficult to enter due to high transaction costs and other market access barriers. Labour-intensive services can now be delivered online, providing new opportunities for developing countries with relatively cheap labour. The emergence of successful industries such as software development or teleservicing in several developing countries is an example of this.[2] Thanks to e-commerce, entrepreneurs in developing countries can also access cheaper, better-quality trade-related services (for instance, finance or business information), thus escaping local de facto monopolies. Finally, e-commerce can stimulate growth in developing countries by helping to improve the transparency of the operation of markets and public institutions. For instance, by simplifying business

[2]See chapter 9 of UNCTAD's *E-Commerce and Development Report* (2001).

procedures, e-commerce not only reduces the cost for businesses of complying with trade-related regulations but also reduces the cost of corruption, a burden that often most severely affects the SMEs and other weaker players in the economy.

8. For all these potential benefits to materialize, national action plans are needed to create an enabling environment for e-commerce and address in a coherent manner areas such as infrastructure, human resources, the legal framework, taxation and local content. This paper begins by summarizing the fundamental features of the e-commerce strategies of a sample of developing and developed countries. Although much work remains to be done (notably in the least developed countries), a significant amount of experience that can be assessed, adapted and eventually replicated is already available.

9. As a contribution to that process, the paper then outlines key policy options that countries can consider in the design and implementation of policies to stimulate, support and maximize the effect of ICT and e-commerce on their economies.[3] Although priority-setting will, of course, be an exercise that only the concerned policy-makers (including civil-society and private-sector players) can undertake, the paper suggests a number of key areas in which action is considered essential:[4]

- Awareness at all levels, ranging from policy-makers (in order to launch reform processes) to local communities and entrepreneurs (to help them identify new opportunities);
- Training and education to provide consumers and enterprises with the necessary skills to use the new technologies efficiently;
- Legal and regulatory reform to remove barriers and uncertainties and to build trust;
- Infrastructure, connectivity and access, which includes aspects related to telecommunication sector reforms, enhancing access to computers, the promotion of open-source software and the possibilities offered by low-cost access devices;
- Policies targeting the development of specific sectors, including the domestic information technology (IT) industry, to help countries gain competitive advantages and accelerate the growth of domestic e-business;
- E-government, which can be a role model for the private sector, help attain a critical mass of users, reduce the cost of transactions between business and government agencies and improve efficiency and transparency in the operation of the public sector; and
- Specific measures to support the adoption of e-commerce technologies and practices by the private sector.

10. Finally, as was mentioned before, a number of international initiatives, some of which include e-strategies, are under way in the field of ICT and development. Bilateral donors are

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[3]In practice, it is not easy to differentiate between general e-strategies and more specific e-commerce ones. The two overlap to a great extent in areas such as awareness, access and regulatory frameworks, and many of the countries surveyed for this paper do not make the distinction.

[4]While a number of the strategy elements presented in this paper have been extensively discussed in previous UNCTAD meetings and publications, this document and meeting will take a holistic look at e-strategies, pointing to the linkages among the different elements.

also increasingly including ICT considerations in the design of their programmes of international cooperation. In this regard, providing support to interested developing countries in defining and implementing their e-strategies for development, and in particular those related to e-commerce, should receive priority attention. Where those e-commerce strategies already exist, they should provide the main reference point for donors in their e-commerce-related technical cooperation. Such close relationships between national e-strategies and international cooperation, which are called for *inter alia* by the G-8's Genoa Plan of Action, would be greatly facilitated by the emergence of as broad a consensus as possible on the fundamentals of e-strategies, especially if ICT are to be mainstreamed into official development aid programmes. This expert meeting and the intergovernmental policy dialogue in UNCTAD of which it is a part represent a major opportunity to move in that direction.

11. The following discussion reflects the findings of an initial survey of national e-commerce strategies as well as previous work done by UNCTAD and other international agencies on specific e-strategy elements. The selection of policy areas addressed in the paper reflects the priorities of the country strategies; these areas should be seen as a first segment of a discussion on national e-strategies, with further elements to be discussed in future meetings.

II. ELEMENTS OF NATIONAL E-COMMERCE STRATEGIES

12. Initiatives aimed at developing national e-commerce strategies have been launched in most developed and many developing countries. But what exactly are the key policy areas that have been included in the strategies, and how do they differ across countries? In order to provide an overview of what countries have done so far or are planning to do in the near future, an initial survey of national e-commerce strategies has been carried out.[5] As a result, 51 countries were identified as having e-commerce strategies or as being in the process of formulating such strategies.[6] The objective of the survey was to include as many developing countries as possible. Therefore, of the 51 countries surveyed, 37 were developing and 14 developed countries.

13. The countries surveyed are at very different stages in their development of national e-commerce strategies. Some have already implemented a number of the policies included in their plans, or have even revised earlier plans, while others (mainly developing countries) have barely started to set up national working groups to examine the topic and provide policy recommendations for action.

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[5]The survey is not inclusive and is based primarily on information available on the Internet; in addition, more than 30 countries were contacted by e-mail and asked to provide short summaries of their national e-commerce strategies.

[6]Australia, Bangladesh, Belgium, Brazil, Brunei, Canada, China, Costa Rica, Côte d'Ivoire, Cuba, Egypt, Eritrea, France, Ghana, Guatemala, Haiti, India, Ireland, Jamaica, Japan, Jordan, Republic of Korea, Lebanon, Lithuania, Malawi, Malaysia, Malta, Mauritius, Mexico, Nepal, New Zealand, Nigeria, Norway, Oman, Pakistan, Peru, Philippines, Russia, Scotland (UK), Singapore, South Africa, Sri Lanka, Sweden, Trinidad and Tobago, Tunisia, Turkey, United Kingdom, United States, Uruguay, Vietnam, Zimbabwe.

14. In spite of this, most strategies contain a number of common elements. Table 1 groups the policy priorities and activities into eight different areas and summarizes the priorities that were listed under each of these policies in the country strategies.

Table 1. Key elements of national e-commerce strategies

Strategy element	Countries including element		
	Number of countries[a]	% of developing countries	% of developed countries
1. Awareness building, training and education	**50**	**70**	**64**
Training and education	27	54	50
Awareness building	23	51	29
2. Access and infrastructure	**41**	**68**	**36**
Infrastructure	21	43	36
Access	16	41	7
Telecommunication sector reform	4	11	0
3. Legal and regulatory issues	**37**	**41**	**85**
Legal issues	29	46	85
Taxation	8	5	43
4. Support for the enterprise sector	**21**	**41**	**43**
5. Sector-specific policies	**19**	**32**	**29**
Trade and investment	9	19	14
Development of IT and other sectors	10	19	21
6. E-government	**16**	**27**	**43**
7. Banking and online payments	**9**	**24**	**0**
8. Others	**17**	**24**	**43**
Standards and trade facilitation	6	11	14
Research	6	8	21
Participation in international debates	5	11	7
[a] This column shows the number of countries that have included a particular policy in their e-strategies.			
Source: Various Web sites; information provided by countries.			

15. As we can see, three broad policy areas are addressed by the large majority of country strategies: (i) awareness building, training and education; (ii) access and infrastructure; and (iii) legal and regulatory issues. These are followed by policies to support the enterprise sector in using ICT; policies to enhance the development and use of ICT and e-business in targeted domestic sectors; e-government; policies related to the banking system and e-payments; and a number of other elements, such as those related to standards and trade facilitation, research in the domestic IT sector and e-commerce, and participation in international forums (e.g. WTO, WIPO). The following parts will discuss the most common policy areas in greater detail, trying to identify the key policy elements and assessing the various policy options available, especially for developing countries.

A. Awareness building, training and education

16. As a result of the survey, policies related to awareness building, training and education are by far the most important elements of national e-commerce strategies: combined, they are included in the national strategies of 50 countries. Almost all of the surveyed developing countries (70 per cent), and most of the developed countries (64 per cent), have included activities related to training and awareness building.

17. Most policy makers agree that unless businesses and consumers are educated about the opportunities and benefits offered by ICT, and unless they are trained to use the Internet, e-commerce will not take off. While access to computers and the Internet is essential, it is not enough; it is equally essential to create a demand for the new technologies and for e-commerce. Some have even argued that education, and not connectivity, is the main challenge for most developing countries seeking to participate in the digital economy.[7]

18. Myths, misperceptions, and missed opportunities surround e-commerce especially in the developing countries, where enterprises are often unaware of the benefits and applications of e-commerce and ICT. Promoting the use of ICT and the Internet therefore ranks highly on the e-commerce agendas of developing countries (see Box 1). Here governments can set a valuable example by providing information and services online and using the Internet as an additional channel of communication with citizens. By stimulating demand for information networks, the government and other public agencies can play an important role in raising awareness of the usefulness of e-commerce and contributing to the increased use of the new technologies (see section E below).[8]

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[7] ILO. *World Employment Report 2001: Life at Work in the Information Economy*. Geneva, 2001.

[8] The introduction of ICT in government departments also plays an important role in raising awareness and creating demand for Internet access. Because of its importance, e-government receives separate treatment here.

Box 1: Raising awareness among citizens and enterprises

Many countries have launched awareness-raising programmes to stimulate the use of the Internet among businesses (especially SMEs) and consumers. Pakistan, for example, has carried out large regional awareness-building programmes to disseminate information about the benefits, importance and challenges of e-commerce; discuss revenue generation, efficiency and competition issues; and generally reduce confusion about e-commerce. Pakistan's goal is to train 5,000 people in technology, business processes and regulations related to e-commerce by 2003. Similarly, the Government of Jamaica is planning a public awareness programme along with the restructuring of the educational system to provide IT training and retraining at all levels linked to the needs of the industry.

Developing-country governments are not the only ones concerned by the need to raise awareness in the business community of the usefulness of ICT. Scotland (UK), for example, has launched a national e-promotion campaign aimed at moving companies from awareness to understanding though a programme of local and national events and a comprehensive information package available to every business in the country via the Internet or a telephone hotline. And a key element of the European Union's e-commerce strategy is to promote e-business for SMEs and encourage them to "go digital".

Source: UNCTAD Internet survey of national e-strategies.

19. Awareness building and training often serve the same purpose – to stimulate the use of ICT. However, raising awareness among citizens who have never used a computer or among businesses that have no IT professionals will achieve little. Therefore, education and training are fundamental to the widespread and effective use of new technologies. Since a networked society is essentially a knowledge society, many of the potential benefits of ICT and e-commerce relate directly to the capability to use information to create new knowledge.

20. Governments can play an important role in enhancing digital literacy through the country's basic education system.[9] Improving Internet access and the number of computers in schools and training teachers in the use of ICT in the classroom will not only improve education but also contribute to a new generation of IT-literate children. At the same time, governments need to be aware that an increase in the number of computers in schools will require training teachers to use the new technologies, and an increase in the number of technicians and other IT-literate people to operate and repair computers and teach software programmes. In low-income countries and remote communities, where education systems may have major deficiencies, community-based centres (such as telecentres) have proven to be successful in providing basic training in ICT literacy and raising awareness of the benefits of using the Internet.[10]

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[9] A serious problem facing many developing countries, especially LDCs, is illiteracy. According to UNESCO, 21 per cent of the adult population was illiterate in 2000, with particular concentrations in South Asia and sub-Saharan Africa. While some of the new technologies (e.g. mobile telephones or telecentres with support staff) can be used by people with minimal or no literacy, the real gains come from using the information and applications provided by ICT (ILO 2001).

[10] ILO (2001).

21. Apart from introducing basic computer education in schools, countries will also need IT professionals such as software engineers, programmers and other technical specialists, as well as business people with IT skills. The demand for ICT-related skills is not limited to the ICT sector but arises in all areas of economic activity, as ICT becomes an essential part of every enterprise. For example, every company using computer systems needs an IT support staff. The demand for IT skills has grown considerably over the past few years and has not been met by the supply of IT labour. As a result, there is a considerable shortage of IT skills, especially (but not only) in the developed countries.[11] To fill this labour shortage, some developed countries have hired high-skilled migrant labour, often from developing countries.[12] This practice can be costly for developing countries, such as India, that have invested heavily in creating a domestic IT human resources pool and that are facing increasing domestic demand for IT professionals. Hence, companies in low-wage countries need to consider providing attractive working conditions to prevent their IT professionals from looking for alternatives abroad.

22. High-skill professional ICT training is usually provided by universities and technical colleges, while lower-skill IT-related training can be offered by community colleges or similar training institutes, private-sector training centres, and in-house company training as well as over the Internet. A number of universities worldwide have started to offer programmes combining business and technical skills. Since women are particularly underrepresented in ICT-related professions, programmes supporting female enrolment are important elements of national strategies in the area of education and training.

23. Designing strategies for education and training that can keep up with the pace of ICT developments poses a major challenge for all countries. Since the public education system often takes a long time to change school curricula (even two to three years can be "long" in the digital age), the private sector plays an important role in providing specialized training. For example, in India the number of private teaching institutes for the software industry has increased significantly over the past few years. International IT companies, in cooperation with relevant international organizations, can be instrumental in building training institutes in the developing countries and thus contribute to narrowing the digital divide.[13] Box 2 provides examples of country initiatives to enhance digital literacy.

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[11]For example, it is estimated that in Europe by 2003 the IT skills shortage will reach 13 per cent of the demand (ILO, 2001).

[12]Even developing countries have started to attract foreign experts. Skilled-labour shortages in the IT sector, coupled with the demand for IT workers, have led Malaysia to lower visa restrictions and issue user-friendly work permits to high-skilled workers from abroad. At the same time, the country is making a great effort to increase IT literacy, in cooperation with local universities and technical colleges.

[13]This could provide a solution for enterprises that are reluctant to invest in training for fear of losing trained workers to "free-rider" enterprises not investing in training.

Box 2: Enhancing digital literacy

A number of countries have invested heavily in improving computer literacy among their citizens. For example, the Republic of Korea has introduced mandatory computer education at all primary schools. It has also established basic computer and Internet training classes for senior citizens at 50 universities across the nation, with the goal of training about 100,000 seniors by the end of 2001.[14] The Government has also targeted housewives, through a programme called "Cyber Korea 21", in its nationwide campaign to teach Internet use, given Korean mothers' important role in educating their children.

Costa Rica, well known for its success in building a strong ICT sector, has placed major emphasis on education. Faced with a limited number of engineers and technicians, the government launched an aggressive campaign, in cooperation with local technical institutions and with financing from the IDB and the private sector, to increase the number of IT and engineering professionals. Today, over 100 small software development companies are operational in the country, employing more than 1,000 professionals and exporting to neighbouring countries, South-East Asia, Europe and Africa.

The involvement of both public- and private-sector companies in providing IT training has also been part of the South African e-strategy. Telkom, the South African telecommunications company, has received funds to offer IT training at its training centres throughout the country and software development training in some of the centres. The department of education is introducing ICT in secondary schools that have Internet connectivity and is planning to include ICT courses in primary-school curricula.

Source: Digital Opportunity Initiative: Creating a Development Dynamic, 2001; see www.opt-init.org/.

B. Access and infrastructure

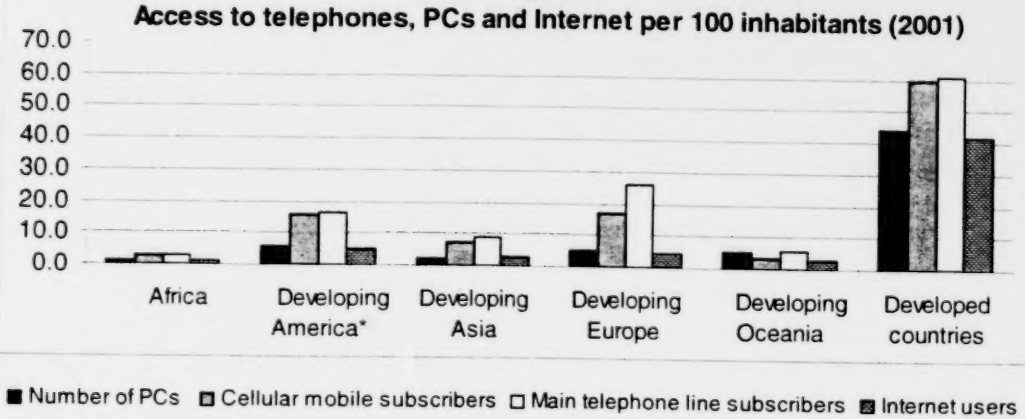
24. Policies related to access, infrastructure and reforms of the telecommunication sector have been included by 41 countries and thus rank second among the country strategies. Again, different priorities were given by developing and developed countries. In the developed countries, which usually have a much better telecommunications infrastructure, infrastructure was included in only four countries' strategies, and policies related to access by only one.

25. Unquestionably, a key priority for developing countries is to ensure that their citizens have access to the Internet at a reasonable cost. In fact, while Internet access can enable an entrepreneur to find information about the market price of the goods he or she produces as well as about new market opportunities, it can also improve access to education, knowledge and health care for the population as a whole.

[14]MyungJong Hong. World-class e-commerce strategies. California Research Bureau, Sacramento, California, October 2000.

26. However, as Figure 1 shows, the Internet remains beyond the reach of the great majority of the world population. Whereas in developed countries over 40 per cent of the population is using the Internet, the percentage drops to less than 1 per cent in Africa. Accessing the Web is possible only when telephones and personal computers (PCs) are available, but these technologies are still in very scarce supply. In addition to this problem, Internet access is still very costly – both in absolute terms and relative to per-capita income – in most developing countries.[15] To tackle these problems, a number of initiatives have been put in place at the national, regional and international (see part I) levels. This part focuses on the policy environment and on actions that Governments can take to increase access to ICT.

Figure 1
Access to telephones, PCs and Internet per 100 inhabitants (2001)



Source: UNCTAD elaboration of ITU data available at www.itu.int/ITU-D/ict/statistics.
*Developing America includes Caribbean countries.

27. One aspect of the problem involves increasing access to PCs and related hardware. While PC prices have fallen dramatically over the last decade, they remain beyond the reach of most individual users and SMEs in developing countries. Perhaps the most common approach to increasing access to these technologies is the opening of telecentres, which provide telephone and computer services to a large number of users. Telecentres can be privately owned or sponsored by Governments, international donors and NGOs. In recent years, many developing countries have seen a proliferation of telecentres, especially in urban areas. On the other hand, telecentres have been regarded as too costly to set up and maintain to provide a real solution to the problem of rural communities' access to the Web.[16] Another common solution has been the provision of computers as well as Internet access in schools, technical colleges and universities. The potential impact of these projects is vast, because the

[15]See ITU, *Challenges to the Network: Internet for Development*, Geneva 1999.

provision of hardware is accompanied by training students in the use of the technologies. Some countries have used this strategy quite aggressively to form a pool of skilled labour, which in turn is seen as a key prerequisite to attracting FDI and developing technologically advanced industries.

Box 3: Open-source software: an opportunity for developing countries?

Open-source software is written and perfected by volunteers, who freely share the programming code that would otherwise be kept secret. The code of most commercial software is kept secret. In principle, anyone can redistribute open-source software without paying fees to its author, and anyone can modify it if he or she distributes the new version under the original distribution terms. Open-source products such as the operating system Linux have become significant competitors to proprietary software products. Linux is the operating system running 30 per cent of all active Web sites on the Internet.*

Unsurprisingly, commercial software companies feel threatened by the rise of open-source software, and misconceptions abound. One is that the software is inherently free, meaning that it must be given away without charge and cannot become part of a lucrative enterprise. Open-source software is free in the sense that anyone is free to view and modify its source code, but not in the sense that nobody is selling it. For-profit companies have found ways to sell open-source software basically by selling customer service and support. While commercial software still dominates the market for personal computers, open-source products are widely used on the servers that power the Internet, a development with profound implications for the software industry and the Internet economy. The 64 per cent market share of the open-source Apache server software is substantially higher than that of any competing product.**

Developing countries wishing to develop an export-oriented software industry need to look beyond operating systems and develop applications, and for this task people may have to be paid. Software exports are driven by an army of paid programmers. The question is how well open-source software will work in this environment. Commercial applications running on open-source operating systems are one alternative and would be an effective option for countries that prefer open-source systems for security reasons. Developing countries could train students for open-source software environments, since the latter allow students to learn how operating systems and applications work on the inside. Once they understand an open-source operating system, programmers can easily build stable and secure commercial applications to run on top of it.

* See www.netcraft.com/survey/.
** See www.netcraft.com/survey/.

[16]For information on telecentres initiatives see the Web site of Bridges, an organization that gives its mission as "spanning the international digital divide", at www.bridges.org.

28. An avenue that has not yet been explored, and that could lead to significant savings in the costs of infrastructure in developing countries, is the use of open-source software as an alternative or complement to costly packaged software (see Box 3).

29. Another strategy that developing countries could pursue is that of promoting means of accessing the Internet without using a PC – for instance, through handheld devices such as portable telephones. A very promising development in this respect is mobile commerce (m-commerce), which permits the conducting of e-business via wireless communications.[17]

30. Reforming the domestic telecommunications sector has proved effective in improving access to and the quality of telecommunication services. In many developing countries, the sector is still a state monopoly. This often results in expensive, inefficient and poor-quality telecommunication services. Hence, there is a tendency to open up the domestic telecommunications market and allow competition, including that from foreign suppliers. The short-term loss of revenue is usually outweighed by the long-term gains resulting from a more competitive, efficient and high-quality telecommunications market. The experience of the last decade shows conclusively that effective reform must include three key elements: private-sector participation, market competition and the creation of an independent regulatory body.[18]

31. As regards the first element, the ITU recently counted as many as 113 countries (out of 201) that had partially or fully privatized their incumbent telecommunications operator. Other countries allowed competition in some segments of the market, while 39 countries had a fully state-owned operator. Private-sector participation has been introduced in the telecommunications sector in different ways: by selling a share of the incumbent to an investor, making a public offering of shares to the public or the incumbent's employees, or issuing additional licences (franchising) to provide telecommunication services or other specific services such as mobile communications, data, and so on.

32. The second key to improving the general performance of telecommunication services is competition in the telecommunications market. Competition has been strongest in some segments of the market, such as mobile telephones and international calling, whereas the market for local calling is still a monopoly in most countries.

33. Finally, regulation of the telecommunications market is still necessary, although today it has a different emphasis than it did in the past, when regulation consisted mostly of tariff and prices control. Today it encompasses competition among suppliers and enforcement of various types of contractual obligations.

34. Actions taken in the three key areas referred to above has allowed unprecedented growth in the number of telephone lines (mobile and fixed) while at the same time bringing

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[17]UNCTAD's *E-Commerce and Development Report* (2002) will devote an entire chapter to this issue.
[18]ITU. *World Telecommunication Development Report 2002*. Geneva, 2002.

down the costs of fixed and mobile telephony. While progress has been universal, some countries have unquestionably performed better than others. While reform priorities have been similar across the world, each country has chosen a different path as regards the sequencing and implementation of the various dimensions of reform of the telecommunications sector, and conclusions can be drawn regarding which approaches have worked best.

35. An important objective to be considered when reforming the telecommunications sector is to ensure that services are equally available in all parts of the country. Generally speaking, rural and poor areas are often the last to be connected or are simply excluded from access to telecommunication infrastructures and services. In many developing countries, the majority of poor people are women living in rural areas, who are also the most affected by unequal telecommunication infrastructures and services. Numerous approaches to tackling this problem include imposing on the telecommunications provider specific targets for covering the country's rural areas and establishing a network based on village mobile telephones.

Box 4: High-speed access as a strategy element

A number of middle-income countries have included high-speed access as part of their infrastructure development policies. For example, improving Internet connectivity is one of the key elements in Jordan's e-commerce strategy. According to its latest report, "Jordan Telecom already offers ISDN access and 64 KBPS to 2 MBPS leased capacity (without modem). State-of-the-art broadband technologies like DSL (Digital Subscriber Lines) and PRI (Primary Rate Interface) are now available, and Frame Relay, fiber and ATM (Asynchronous Transfer Mode) are now offered commercially. Two new high-speed Internet connectivity ADSL lines will be available to users, offering download speeds at 512Kbs and 1,024Kbs. A newly completed dedicated data network, access to a national Internet node, and links to international fiber optic systems such as FLAG (Fiber Optic Link around the Globe) have all dramatically improved Jordan's Internet and data transmission capabilities."[19]

Similarly, providing high-speed Internet access has been a priority for the Government of the Republic of Korea. The country, which already has the highest broadband density worldwide, planned to provide more than 80 per cent of telephone users in the country with access to a high-speed Internet connection by the end of 2001. Furthermore, the country has introduced low Internet access fees: in 2000, Korea had the least expensive Internet access charges of all 29 OECD member countries.[20]

The development of broadband has also been a major element of Costa Rica's e-strategy. As a result, Costa Rica is now second worldwide in broadband density (DLS connections per 100 inhabitants), after South Korea and followed by Canada and the United States.

[19]For more information on Jordan's initiatives, see www.jordanembassyus.org and www.jordantelecom.jo/services.htm.
[20]MyungJong Hong (2000).

C. Legal and regulatory issues[21]

36. Policies related to establishing the legal basis for e-commerce (both at the international and national levels) have been included in the e-strategy programmes of 29 of the surveyed 51 countries. Together with fiscal policies, they appear in 37 country strategies and thus rank third in the national strategies. A clear difference can be observed between the priorities of developed and developing countries: while all surveyed developed countries include either legal or fiscal issues in their strategies, only 50 per cent (19 out of 37) of the developing countries have thus far mentioned the legal environment in their programmes for e-commerce.

37. An important concern of many countries is that existing legal frameworks may not adequately accommodate e-commerce, and that existing laws centring on paper-based systems may prove a barrier to increased global e-trade. Thus, in a number of meetings and intergovernmental debates held under UNCTAD auspices, the need for a legal and policy infrastructure that is supportive of and conducive to the practice of e-commerce was identified as one of the prerequisites for the growth of such commerce. The existence of a predictable legal framework has likewise been singled out on a number of occasions as an essential tool for enhancing the level of trust of both businesses and consumers in commercial transactions.

38. Countries wishing to ensure that electronic transactions are legally valid, binding and enforceable must address the following three fundamental questions: (i) Is the transaction enforceable in electronic form? (ii) Do the parties trust the message? (iii) What rules govern the electronic transaction?[22] Although a number of important legal issues such as applicable law, jurisdiction, consumer privacy and data protection remain unresolved at the international level, a certain degree of predictability and legal certainty has been achieved by a large number of countries, including some developing countries, that have enacted legislation recognizing the legal value of electronic means of communication and the validity of electronic signatures. Thus, legislation based on the 1996 UNCITRAL Model Law on Electronic Commerce, whose main objective is to offer national legislators a set of internationally acceptable rules allowing a number of legal obstacles to be removed and a more secure legal environment to be created for e-commerce, has already been adopted by a significant number of countries.[23] Furthermore, it seems that the recently adopted

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[21]Only a select number of issues will be discussed in this section. Others, such as those related to taxation, e-finance and e-payments, consumer protection and certification are equally important and have been discussed at length in previous UNCTAD meetings and publications.

[22]Smedinghoff T. Creating enforceable electronic transactions". Available at www.bakernet.com/ecommerce/.

[23]Australia, Bermuda, Colombia, France, Hong Kong (China), Ireland, Philippines, Republic of Korea, Singapore, Slovenia, the States of Jersey (Crown Dependency of the United Kingdom of Great Britain and Northern Ireland). Uniform legislation influenced by the Model Law and the principles on which it is based has been prepared in Canada (Uniform Electronic Commerce Act, adopted in 1999) and in the United States (Uniform Electronic Transactions Act, adopted in 1999). See www.uncitral.org/en-index.htm.

UNCITRAL Model Law on Electronic Signatures (July 2001) and its Guide to Enactment are currently being considered by a number of countries wishing to enact electronic signature legislation.[24]

39. In addition to electronic contracting and authentication of electronic records, an area that deserves special attention is the resolution of commercial disputes arising in the context of e-commerce. Governments face options ranging from using the judicial apparatus of the State – often too rigid and slow in responding to disputes in cyberspace – to delegating some or all of the dispute resolution power of the State to private self-regulating entities. Methods under consideration range from mediation, which aims at encouraging the parties to reach an amicable settlement, to binding arbitration, which imposes on the parties a legally enforceable arbitral award through the reasoned decision of the arbitrator. These methods are often subsumed under the rubric of alternative dispute resolution (ADR) or online dispute resolution (ODR) when it takes place using computer-mediated communication. Governments wishing to foster the use of ADR/ODR systems should ensure that their legislation does not hamper the use of out-of-court schemes. Since ADR/ODR systems will continue to be developed independently of the court system, States should also consider investing more in modernizing their judicial system by training judges, increasing the number of judges, equipping their courts with up-to-date infrastructures and allowing them to proceed online if need be.

40. Although not many developing countries have enacted legislation in the field of data protection and information privacy, some governments in the developed world have already begun to implement data protection or information privacy concepts by regulating the collection, use, dissemination, and protection of personal data to which business actors have access over the Internet. While data protection legislation is generally designed to be effective domestically, restrictions on transborder transfers of data have a direct effect on other countries. Thus, many developed countries, in order to prevent circumvention of the law through the use of a third-party country and to protect the rights of individuals to their personal data, prohibit the transfer of personal data to countries where the data are not provided the same, or an adequate, level of protection.[25] This approach might particularly affect developing countries, where legal infrastructures often offer little protection, if any, to personal data. The approach may have a detrimental effect on many developing countries, whose economic growth may be limited by restrictions on transfers of data from industrialized countries. To avert the negative consequences of such restrictions, developing countries might consider providing an adequate level of protection for transfers of personal

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[24] A growing number of developing countries in Latin America and Asia have enacted legislation that recognizes the validity of electronic signatures. Thus, out of approximately 60 countries that have enacted legislation on electronic/digital signatures, 21 are developing countries. African countries lag far behind, and many of them do not have any legislation accommodating e-commerce. For an example of a digital signature law survey, see rechten.kub.nl simone ds-lawsu.htm.

[25] See Articles 25 and 26 of the Council Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of Such Data, 1995 O.J. (L281) 31 (Nov. 23, 1995).

data by enacting similar legislation, through contractual measures or through "safe harbour" arrangements.[26]

41. In the area of intellectual property there is a clear recognition that electronic means of communication facilitate exchanges, both authorized and unauthorized, of patented ideas and copyrighted works. Intellectual property and cyberspace intersect at many levels. Some important issues such as the definition and scope of rights in the digital environment and some of the challenges of online enforcement and licensing are addressed in two treaties that were concluded at WIPO in 1996: the WIPO Copyright Treaty (WCT) and the WIPO Performances and Phonograms Treaty (WPPT) (commonly referred to as the "Internet treaties").[27] The ratification by developing countries of these treaties will assist in the adaptation of intellectual property laws for the digital age and will provide governments with the tools to protect their national intellectual property assets. This in turn will ensure that their territories do not become havens for intellectual property piracy and infringement of intellectual property rights, which would discourage international investment and technology transfer.[28] The goal of the evolving legal principles in this area should be the protection of intellectual property rights through development of an appropriate intellectual property framework that does not impede the growth of the Internet.

42. Another important issue to be considered by Governments is security. Lack of an adequate legal framework with respect to information and infrastructure security and computer crime will wholly or partially prevent developing countries from grasping the opportunities offered by e-commerce. Most industrialized countries have enacted legislation pertaining to IT security and computer crime. Developing countries are encouraged to take a global perspective when developing a legal and regulatory framework regarding IT. In this respect it is important to emphasize that while nation-states have borders, cyberspace does not. International coordination and cooperation is a necessity in the fight against cybercrime.[29]

43. Where the regulation of Internet content is concerned, the global nature of the Internet creates serious issues for systems of law based on territorial and national boundaries. Thus, it is almost impossible for a particular country to regulate content originating in foreign countries. Because of this, most countries have focused their law enforcement efforts on content providers in their own countries. It is the task of policy makers to evaluate in light of

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[26] An example of a safe harbour arrangement is the agreement between the United States and the European Union, which is available at www.export.gov/safeharbor.

[27] These treaties are not yet in force. The text and the status of ratification can be checked at www.wipo.int/treaties/ip/index.html. See also the WIPO Digital Agenda at ecommerce.wipo.int/agenda/index.html.

[28] See WIPO's Primer on Electronic Commerce and Intellectual Property Issues, paras. 119 and 213, at ecommerce.wipo.int/primer/index.html.

[29] See the Council of Europe Convention on Cybercrime (2001) at conventions.coe.int/Treaty/en/Treaties/Html/185.htm.

their own nation's social, economic and political circumstances how and whether content available on the Internet should be regulated.

44. Finally, it should be mentioned that, in addition to legislation (national and international legal instruments) and contractual solutions (e.g. model interchange agreements), self-regulatory instruments such as trustmarks or "seals of approval", guidelines and codes of conduct constitute additional valuable tools for promoting consumer confidence and boosting e-commerce. States can play an important role in the creation of self-regulation instruments by promoting and facilitating the development of such instruments and by adopting them.

D. Sector-specific policies to promote e-business

45. A number of different policies related to trade, investment and the development of specific industry sectors have been included in the e-commerce agendas of 19 of the surveyed countries, both developed and developing. They include changes in trade policies, developing the domestic IT industry (including the establishment of software technology parks) and offering investment incentives to IT-related businesses. A number of countries have targeted specific sectors that they see as particularly suited to the adoption of e-commerce.

46. Common changes in trade policies include the lowering of import tariffs on computers and other hard- and software, which are important inputs into the domestic IT industry. As this measure typically results in lower prices, it has proved to be helpful for increasing the use of computers and ICT in general, and especially among SMEs.

47. Sectoral policies aim at strengthening the use of ICT and e-commerce in specific economic sectors where a country has a comparative advantage, or "mainstreaming" e-commerce. Box 5 provides examples of sectors that have been targeted by the countries included in the survey.

Box 5: Targeting potential e-business sectors

Countries that have included in their national e-strategies specific sectors to be targeted for the development of e-commerce include the following:

Australia - Transport, financial services and health industries;
Egypt - Tourism, health, entertainment, foods and beverages, textiles, furniture and electronics;
India - Computing and electronics, chemicals and petrochemicals, the automotive industry, natural medicines, paper products, financial services, travel and tourism, business services, communications and utilities;
Ireland - Hardware, software, processed food, digital support services, training and digital content distribution sectors;
Jamaica - Music and the software industry;
Mexico - Fresh and processed foods, footwear, textiles, furniture and gifts; and
Oman - Tourism.

Source: UNCTAD's Internet survey on national e-strategies.

48. Developing the domestic IT sector can be critical for increasing ICT usage in the economy as it provides key inputs for companies which want to move into e-business. When developing the domestic IT industry, it is important to target sectors in which the country has a real and potential comparative advantage.[30] In the developing countries, generally speaking, policies should support IT businesses that offer support of general purpose software, develop specialized software for markets for which there is local demand, offer services linked to local IT use, support e-commerce, develop Internet content, or who offer call centres and similar IT-enabled services. Less recommended to developing countries or newcomers are industries focusing on mass hardware production, semiconductor production and general purpose packaged software as they require capital-intensive infrastructure, manufacturing capabilities, and an established industrial base. [31]

49. Targeted industries and sectors should be developed in close relationship with local end users and their needs. Software services are especially suited to adapt to local needs; at the same time they can be used to develop commercial IT products for export. But the development of customized software services may require a high-skilled workforce, whereas cheap, labour-intensive services such as call centres, data processing or support services to international firms require relatively little investment and training. Each country needs to identify its own needs and potential opportunities of ICT and e-commerce.

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[30]The Government of Jamaica plans to allocate 3 per cent of its budget to, *inter alia,* jumpstart the domestic IT industry. Jamaica has established customized programmes targeting its music and software industries in order to encourage the development of cryptographic products and services to be used by indigenous businesses.

[31]Kraemer K and Dedrick J. *IT and Economic Development.* Center for Research on Information Technology and Organizations, University of California, Irvine, California, 1999.

50. While policies to attract foreign capital for the development of domestic IT-related industries are often the only alternative for capital-scarce countries, offering financial incentives can also have a costly impact on the budgets of small countries.[32] In such cases, it is important that the foreign companies create as many linkages as possible with the domestic economy through domestic suppliers, software development firms and other services.[33]

51. Policies and programmes that support the private sector, and in particular SMEs, in using ICT and e-commerce have been incorporated in 21 of the surveyed national e-commerce strategies.[34] They include providing financial aid and loans to help SMEs use the Internet and its e-commerce applications; financial and technical support in the development of Web sites; and online information on trade fairs, investment opportunities, trade policies, markets and commodity prices. In some countries, grants and tax credits are given to encourage e-commerce projects and the adoption of e-business.

52. While these measures may improve SMEs' access to financing, SMEs should also be encouraged to introduce technologies permitting them to pay and get paid online and enter Internet-based credit and performance risk databases. This approach might contribute to overcoming information asymmetry and would allow SMEs access to e-finance on a regional and global level, thus pushing down the cost of domestic credit.

E. E-government

53. By assuming a leadership role in the adoption of e-business practices, governments can make an important contribution to the promotion of e-commerce. Of the surveyed countries, 16 decided that putting the government online was an important element of their e-commerce strategies. Interestingly, developed countries are more heavily represented in this area than developing countries: while 43 per cent of the surveyed developed countries included e-government in their strategies, only 27 per cent of the developing countries did so.

54. The adoption of e-government practices[35] is a fundamental facet of e-commerce strategies. By becoming "model users" of the Internet, governments can at the same time facilitate the achievement of e-commerce strategies and contribute to core development objectives:

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[32]This was the case, for example, with Costa Rica (see *Digital Opportunity Initiative Report*, 2001).

[33]See also UNCTAD, *World Investment Report 2001*, Geneva, 2001.

[34]China, for example, designated the year 2000 as the "year for Chinese enterprises to go online", with the goal of putting 1 million small enterprises, 10,000 medium-sized enterprises and 100 large enterprises online by the end of 2000. A number of online services are offered to enterprises to encourage them to achieve this goal.

[35]Broadly defined as the application of ICT and especially the Internet to enhancing access to and delivery of government services to benefit citizens, businesses and public-sector employees.

- *Efficiency.* As an information-intensive activity, government operations are ideal candidates to benefit from the efficiency gains created by the Internet. Given the relative importance of the public sector in many economies and the volume of resources it manages, such gains will have a major impact on the overall efficiency of the economy.
- *Competitiveness.* By offering online services in sectors such as taxation, social security, customs, import and export procedures, and permits and licences, e-government can reduce the cost for enterprises of complying with government regulations.
- *Transparency.* Increased transparency and accountability in public services facilitate the fight against corruption, which creates additional costs for enterprises. Transparency can therefore be another way in which e-government can help improve a country's competitiveness and its ability to attract foreign investment.
- *Awareness and education.* By embracing the Internet, governments can accelerate the change in attitude that is needed for e-commerce practices to spread among private-sector enterprises (particularly SMEs) in developing countries. Just as some large corporations have forced their suppliers and distributors to adapt to e-commerce, governments can stimulate the introduction of e-commerce by demonstrating the potential of the Internet and by encouraging the private sector to adopt e-practices in its dealings with government agencies.

55. Fundamentally, e-government is about using the Internet to reorganize government services, focus them on the needs of users and make them more transparent and efficient. In UNCTAD's experience, the main requisites for success in this process are political will and the identification and use of the right incentives for change among both users and government employees. E-government poses a complex challenge for governments and calls for political commitment and a clear strategic vision at the highest possible level. This in turn requires policy-makers to be fully aware of the issues at hand and familiar with the Internet and its applications.

56. At a less conceptual level, and in addition to the problems faced by any enterprise adapting to e-commerce, government agencies will have to overcome specific issues relating to their size and complexity. They will also have to address concerns about inequality of access to the Internet, and they will have to revise the regulatory framework in which they operate (e.g. to address privacy concerns), which may require interventions that are quite different from those needed for the legal accommodation of e-commerce. Another important aspect of the implementation of e-government strategies is that the shift in focus from the needs of the organization to those of users must translate into a change in resource allocation priorities and a thorough review of business processes. This in turn can be a source of internal conflict, which, if it results in service disruptions, can damage the credibility of an e-government project.

57. Available experience (which is heavily concentrated in developed countries) shows that a move towards e-government will be incremental. The areas in which progress is likely to be faster coincide in part with those in which the private sector is getting more benefits from the Internet and where, therefore, the necessary strategic concepts and the technology tools are available and need little or no adaptation. These include procurement, applications to help agencies share information more efficiently (thereby reducing administrative and

managerial costs) and Web sites that provide convenience for citizens (e.g. enabling the renewal of licences online) and reduce transaction costs for the agency. As governments progress in their understanding of the benefits of the Internet and the changes it requires, e-government will enter a second phase in which portals integrating a wider range of online transactions for businesses and citizens will proliferate.

58. Following are some practical issues that governments interested in the potential of the Internet to enhance their services may wish to consider:

- Technology for e-government does not need to be complicated, but it must be reliable and fast. In a first phase, off-the-shelf e-commerce solutions should be used whenever possible.
- Business-oriented e-government projects should receive priority, given that the return of the investment in terms of competitiveness gains is likely to be higher.
- As long as a large part of the population remains without easy access to the Internet, traditional channels such as counter service and the telephone will remain important.
- Citizens and businesses need to be made aware of the availability and advantages of e-government services.
- E-government projects are an excellent opportunity for establishing new partnerships with the private sector, which can contribute financial resources and its experience in e-business.

III. CONCLUSION

59. This paper has discussed a number of issues that have been central to the development of national e-commerce strategies. Neither the list of issues covered here nor the substantive discussion of each issue should be considered exhaustive. Rather, the paper's goal is to identify selected key elements of e-strategies that can be discussed in depth by the experts attending the meeting.

60. A final issue that needs to be considered in the debate on national e-commerce strategies concerns the methodology of the design and implementation of the strategies. Here a participatory approach is essential. Creating awareness at the political level or adopting a state-of-the-art regulatory framework will be fruitless unless the elements of an e-commerce strategy are rooted in the reality of the national economy. This can only be achieved through a consultative process that allows the involvement of all the stakeholders of the development process, especially the private sector and the NGOs. Therefore, experts are particularly encouraged to introduce into the debate their experiences in designing and implementing e-strategies as well as identifying the successes and failures of specific policies.